ADVANTAGES OF DECISION-MAKING USING AI-AHP: A CASE IN THE BANKING SECTOR

Author 1: *Mislav Vusić[1]*
Author 2. *Barbara Šlibar[2]*

Highlights

- This study explores the advantages of using Analytic Network Process along with Artificial Intelligence for decision-making model structuring.
- The context for the study is a decision-making course primer at college level.
- The decision-making structuring is done for a tactical decision concerning the case of a financial organization.

ABSTRACT

In the contemporary business landscape, decision-making processes have become increasingly sophisticated and data-driven. This research explores the structuring of decision-making problems through the Analytic Hierarchy Process (AHP), using traditional research methods, such as expert interviews and literature review, followed by artificial intelligence (AI) support, specifically the ChatGPT tool. The paper discusses the AI advantages with AHP based on students' experience when addressing a tactical problem concerning Internet Security Vulnerabilities in the Current Version of a New Application within a financial organization.

Keywords: AI in problem structuring, AI-AHP approach, AI advantages.

1. Introduction

Integrating generative artificial intelligence (AI), specifically ChatGPT, into the Analytic Hierarchy Process (AHP) helps address inefficiencies such as the time and effort needed to properly structure decision-making problems, particularly when identifying criteria, sub-criteria, and related factors. This study demonstrates several notable advantages of using ChatGPT in this context.

2. Literature Review

While several publications were consulted for this study. For the purpose of this abstract, the following articles key for this study: Stone et al. (2020) conduct a comprehensive literature review on the use of AI in strategic marketing, highlighting the practical

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[1] Mislav Vusić, University of Zagreb Faculty of Organization and Informatics, Pavlinska 2, 42000 Varaždin, Croatia, e-mail: mvusic23@student.foi.hr.

[2] Barbara Šlibar, Ph.D., Department of Organization, University of Zagreb Faculty of Organization and Informatics, Pavlinska 2, 42000 Varaždin, Croatia, e-mail: bslibar@foi.unizg.hr (ORCID: 0000-0002-7201-9494).

implications of AI in organizational decision-making more broadly. More specifically, Shrestha et al. (2019) propose organizational decision-making through an integrated hybrid model (AI and Human) to enhance decision-making processes.

3. Objectives

There were two objectives for the present study:
   a. To explore the advantages of using AI-AHP in decision-making structuring.
   b. To propose a tentative decision model for the target financial institution.

4. Research Design/Methodology

The methodology followed to structure the decision-making model was as follows: first, a review of the extant literature was done, followed by an interview to a bank expert; second, Generative AI (ChatGPT) was used to explore alternative decision-making models as a way to add/modify or confirm the existing decision-making structure.

5. Results/Model Analysis

By leveraging AI, it was possible to generate well-structured, contextually relevant criteria tailored to the tactical problem at hand. This approach not only saved valuable time but also ensured the criteria were comprehensive and aligned with the problem being addressed. The integration of AI within the AHP framework enhances its decision-making capabilities. AI can process large volumes of data, identify patterns, and provide evidence-based predictions, thereby reducing the decision-maker subjectivity inherent in traditional methods. An additional key advantage of AI is its ability to alleviate decision fatigue.

6. Conclusions

AI language learning models (LLMs) such as GPT-4 are constantly improving, but the results are already impressive. In the future, most of AHP processes could be done only with AI. However, AI must be used with big caution (e.g. hidden biases) ethical considerations are necessary to prevent undesirable results.

7. Limitations

Given that this study was conducted within the context of a single case study, it serves as a significant first step in exploring the advantages of AI-AHP; however, the findings are not generalizable.

8. Key References

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